Claude Elwood Shannon: Collected Papers. N.J.A. Sloane and A.D. Wyner (Eds.). IEEE Press, New York (1993). xliv + 924 pp., ISBN 0-7803-0434-9.

This volume contains the first complete bibliography of Shannon's works, numbering 127 items; 76 of these are published here (some for the first time) in their original format, including Shannon's masterwork, "A Mathematical Theory of Communication," written in 1948. Also included is a 1987 interview with *Omni* magazine that shows the lighter side of the man—his boyhood interest in Morse Code, for instance, and his lifelong interest in erector sets.

Of particular interest is the inclusion of Shannon's "lost" M.I.T. Ph.D. thesis on population genetics. The editors of the collection did not find it mentioned in a recent authoritative bibliography on the subject. They asked two experts in the genetics field to comment on its absence. One of them said Shannon was working in isolation, and this was why it had never been disseminated in the genetics research community. If it had been, he believes it would have made a substantial difference

to the history of genetics. The publication of the Shannon thesis here for the first time is therefore interesting on several levels.

Is communication theory important enough to today's information science to buy a 900-page volume of Shannon's collected papers? Can one get by with the original Shannon (plus Weaver), first published in 1949 and still in print? I will try to answer the first question first.

Shannon is best known for his communication theory, or information theory, as it came to be known. In the 1960s and 70s there was a backlash among information scientists against the behaviouralist S-R model that Shannon's theory, or rather the use of it in information science, seemed to support. The primary criticism then was that the theory seemed to support the notion that information could be looked at separately from the "effect" it had on the person receiving it—in other words, the "psychological" element of information, or the "meaning" of the information, which critics said was individual and not subject to mathematical laws. But did Shannon's theory exclude "meaning" from the discussion? That was the debate.

Since that time, information science itself has shifted; information is now seen as a process constructed by the information user; and, at least in the beginning of the process, information and meaning may be separate things. Shannon's theory once again has possibilities here.

Now to the second question: Is it worth buying Shannon's *Collected Papers*, which includes everything important he ever wrote in such diverse fields as cryptography, computer games, and genetics, if one already has his *Mathematical Theory of Communication* in one form or another? The answer to this question can be divided into two parts for two audiences.

The first part is the research library, which aims at an audience interested in what goes into the making of an important theory, a theory still being discussed and debated (part of the reason his theory is still talked about is because it is hard to understand, or open to diverse interpretations). For this audience the present volume gathers into one place articles that are presently dispersed in various libraries on campus.

The second part of the answer is whether or not the present volume is suitable for an audience not familiar with the mathematical theory of communication, such as a student in communications or information science; for this audience, not only is the present volume carefully and interestingly put together, but it also shows the full breadth of what interested Shannon over the course of his life. The student new to the subject might find one of these other things interesting, and then read the communication theory later.

The present collection's primary concern, however, is for the researcher. Shannon is not only important because his theory links information science to physics and the central philosophical and scientific issues of our day; because it does this, Shannon continues to influence present-day, state-of-the-art, new-paradigm information science research.

REFERENCE

Shannon, C.E., & Weaver, W. (1949). *The mathematical theory of communication*. Urbana, IL: The University of Illinois Press.

Graduate School of Library and Information Science CHARLES COLE
Elborn College
University of Western Ontario
London, Ontario, Canada